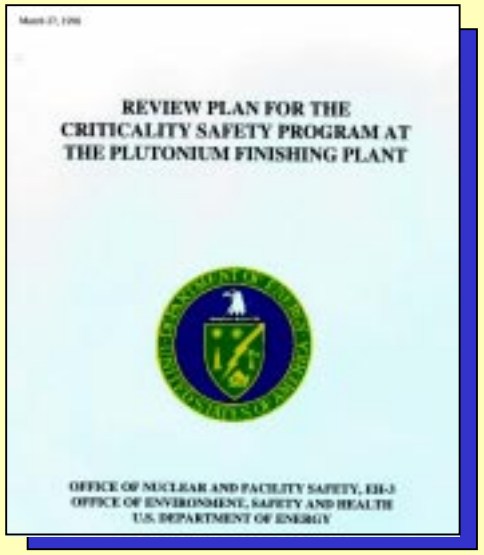
The Plutonium Finishing Plant Criticality Safety Program Review

U.S. Department of Energy
Office of Environment, Safety and Health
Office of Nuclear and Facility Safety

June 12, 1998

Introduction

- DOE-RL Assistant Manager for Facility Transition requested a criticality safety program review of the Plutonium Finishing Plant
- Preparation for restart of Phase 2 Transition Operations (thermal stabilization/ can handling)
- Review Plan based on National Consensus Standards, DOE Orders, and DOE Policies and Procedures (e.g. RL FRAM, 450.4, 450.5)



Progress Since December, 1997 DOE Review

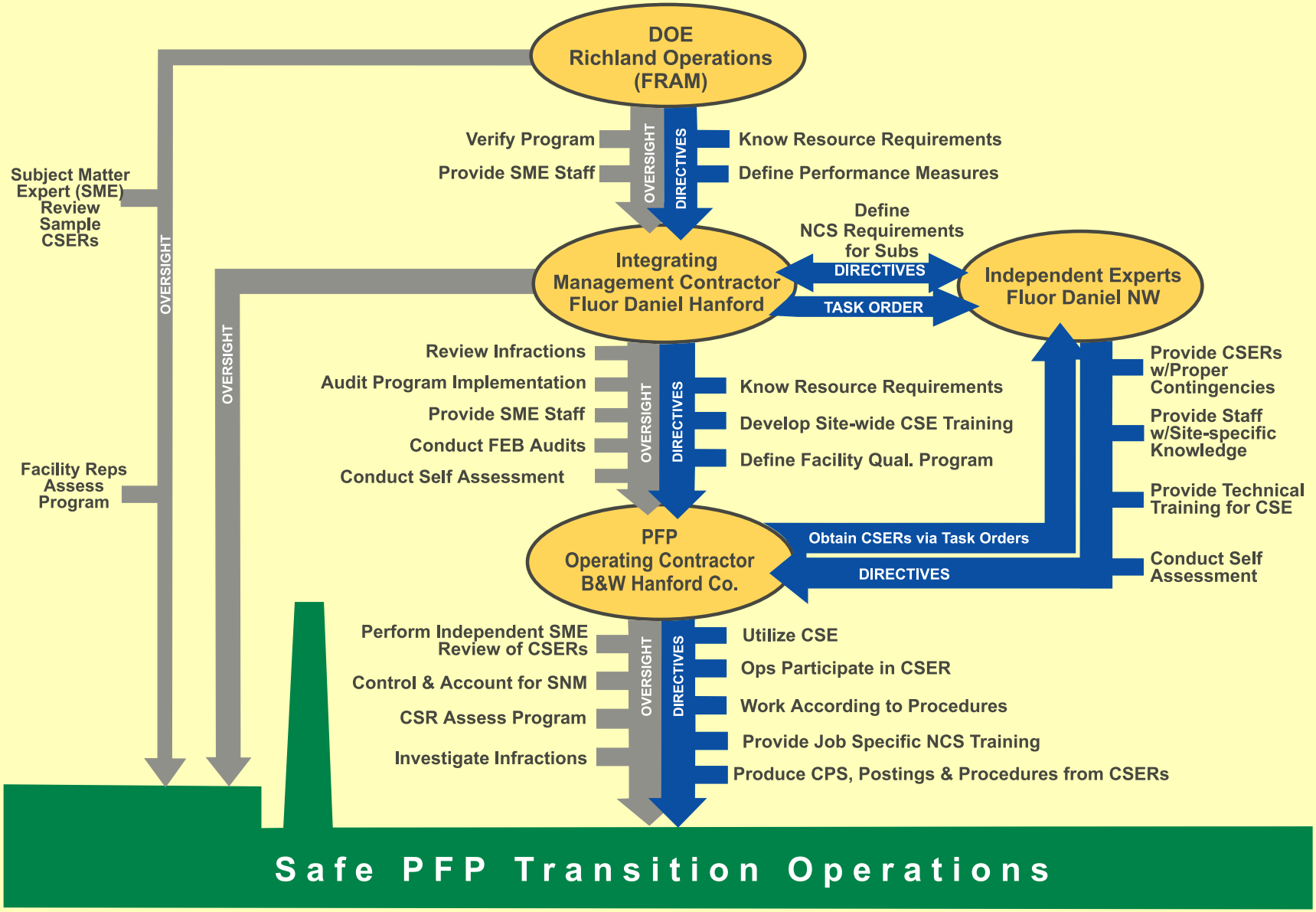
- Peter Knollmeyer, the Assistant Manager for Facility Transition for DOE-RL, supported all the recommendations for improving the PFP NCS program.
- BWHC was responsive in addressing the recommendations, including implementing the graded infraction program, employing a full-time criticality safety engineer (CSE), and simplifying limits.
- DOE-RL recognized the need for a comprehensive follow-up assessment and initiated this review.

Safety Concerns

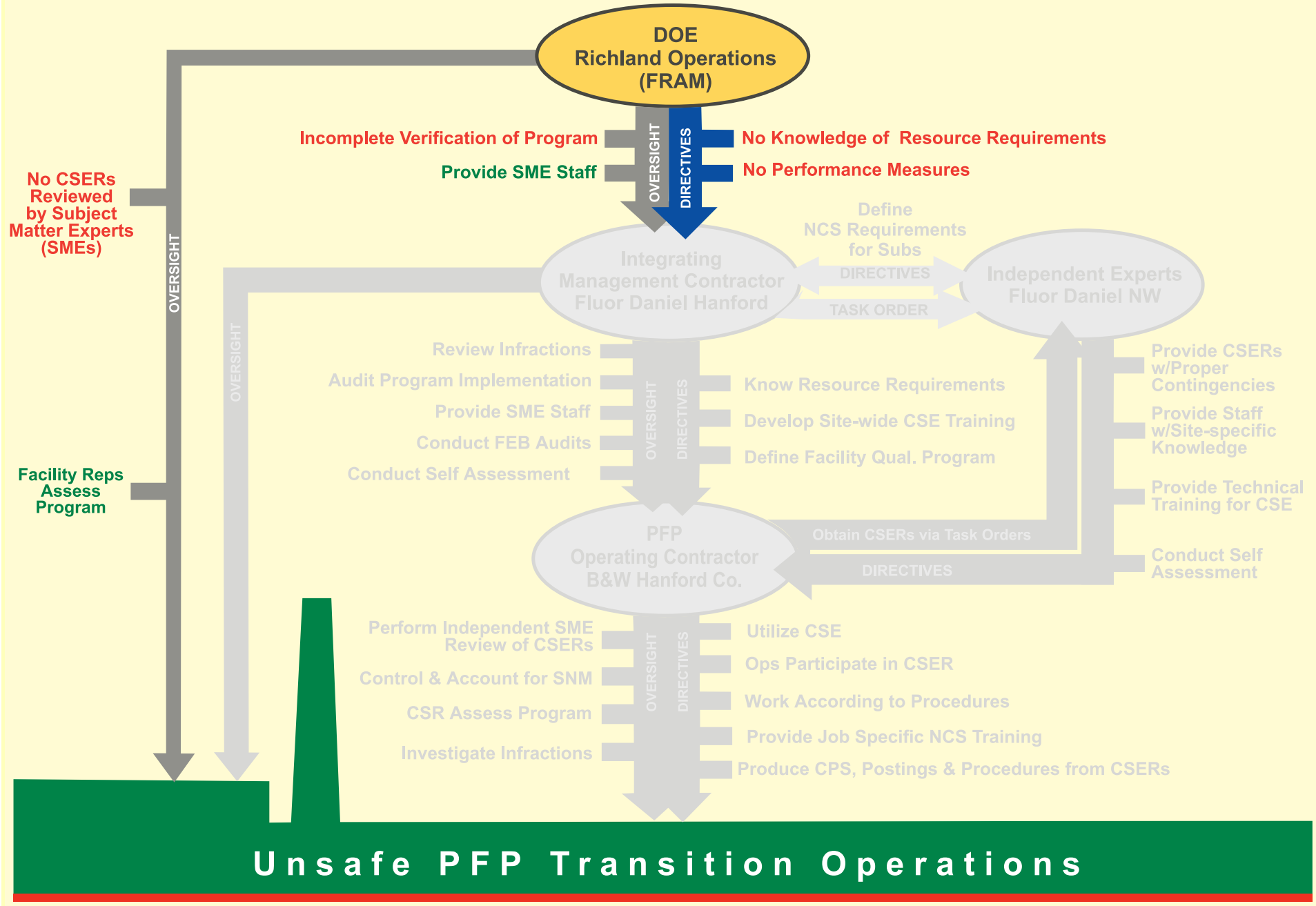
- Potential critical mass in Glovebox HC-21A allowed by approved Criticality Safety Evaluation Report (CSER)

- No process or organization would likely discover this safety deficiency

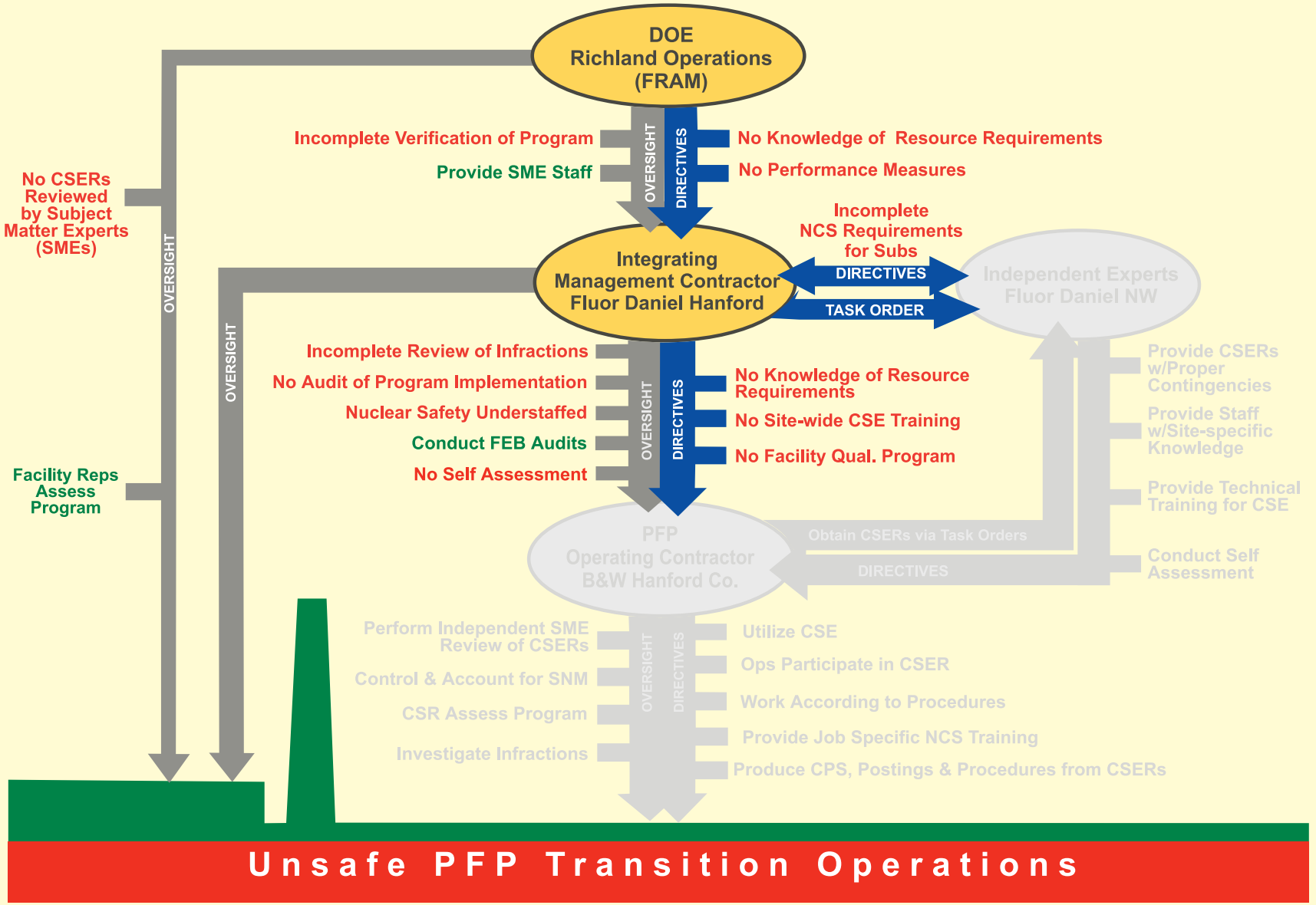
Standards Based Criticality Program - Tailored to PHMC



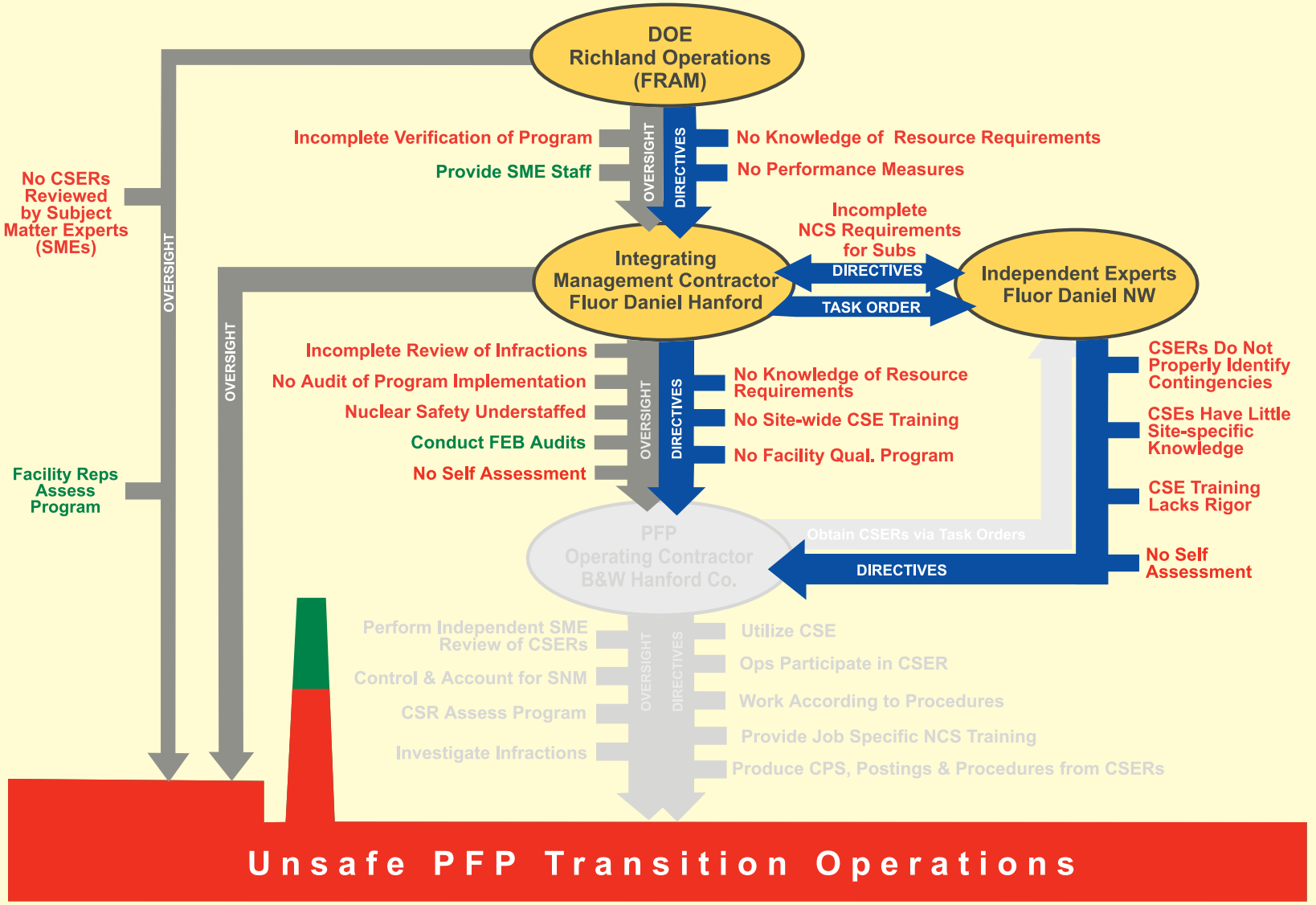
NCS Program Assessment Findings - DOE/RL



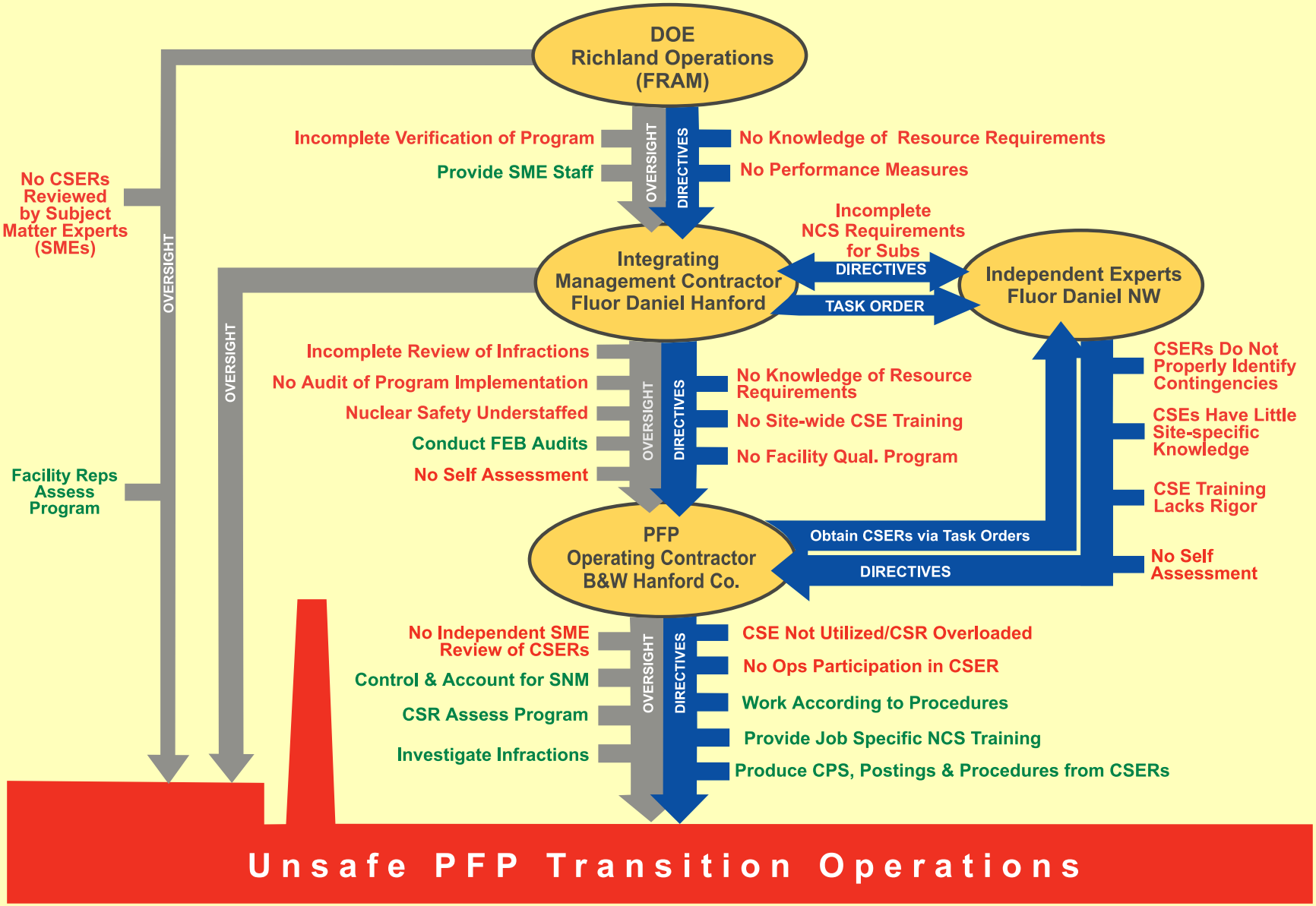
NCS Program Assessment Findings - Fluor Daniel Hanford



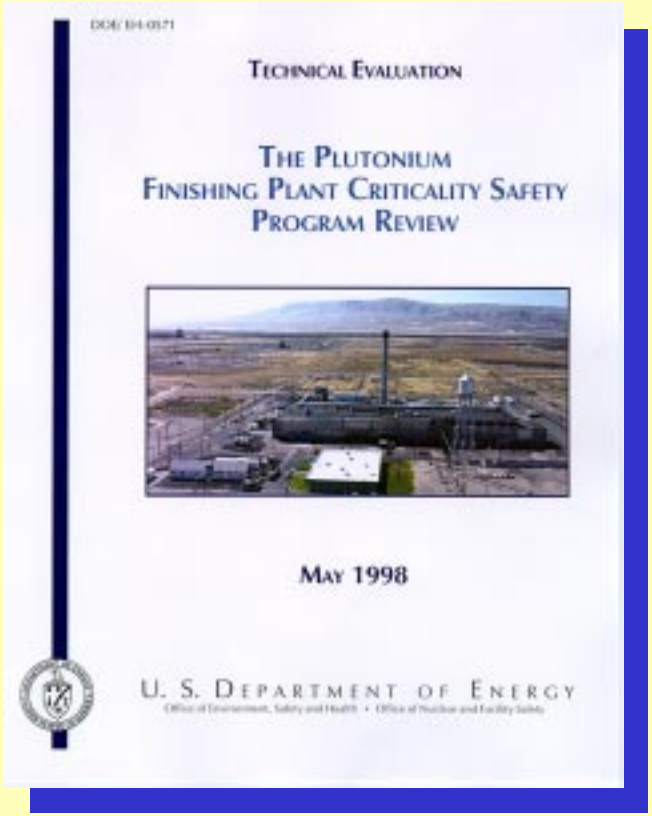
NCS Program Assessment Findings - Fluor Daniel Northwest



NCS Program Assessment Findings - B&W Hanford



Path to an Acceptable Criticality Safety Program



Twenty-Seven Recommendations and Ten Suggestions

<u>Five Important Recommendations</u>

- The Team recommends a complete review of Phase 2 CSERs prior to approving restart.
- BWHC should perform Technical Peer Reviews of CSERs with independent Subject Matter Experts (SMEs).

Path to an Acceptable Criticality Safety Program (Cont'd)

- Some of the NCS responsibilities currently assigned to the CSR should be transferred to the criticality safety engineers supporting PFP.
- The Team recommends that, in the near term, criticality safety engineers with PFP experience provide full time support to BWHC. In the long-term, other criticality safety engineers should be mentored to qualify them to work in the facility.
- DOE-RL should ensure deficiencies are corrected, review evaluations and provide criticality performance measures as stated in the Functions, Responsibilities, and Authorities Manual.

Conclusions

- Fluor Daniel Northwest does not correctly conduct analyses and ensure competent peer review.
- Fluor Daniel Hanford does not have a Criticality Safety Program and staff to verify implementation.
- At current resource levels, the Team believes FDH will not have an effective criticality program in place prior to September 1998 when the exclusivity clause with FDNW expires.
- The PFP Criticality Safety Program is deficient with respect to DOE Orders and ANSI/ANS-8.19.